

AVOCADO PEAR FRUITS AND LEAVES AQUEOUS EXTRACTS INHIBIT α -AMYLASE, α -GLUCOSIDASE AND SNP INDUCED LIPID PEROXIDATION – AN INSIGHT INTO MECHANISMS INVOLVE IN MANAGEMENT OF TYPE 2 DIABETES

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ABSTRACT

Introduction

The use of natural products for the management of diseases had been established in folk medicine. Avocado pear (*Persea americana*) is used in traditional medicine to manage type 2 diabetes mellitus. Therefore, the focus of this study was to investigate the mechanism behind its antidiabetic prowess by accessing the inhibitory activities of aqueous extract of leaves and fruit parts of avocado on α -amylase, α -glucosidase and malondialdehyde (MDA) produced by sodium nitropruside-induced lipid peroxidation in rats' pancreas *in vitro*.

Methods

The inhibitory effect was assessed using 5mg/ml aqueous extracts on α -amylase and α -glucosidase activities, ABTS (2, 2'-azino-bis (3-ethylbenzthiazoline-6-sulphonic acid)) radical, NO[•] radical scavenging abilities and SNP-induced malondialdehyde produced after which the types and quantity of phenolics in the leaves and fruit parts of *Persea americana* were characterized.

Results

The leaves, peel, flesh and seed extracts inhibited α -amylase, α -glucosidase and the production of malondialdehyde in a dose dependent pattern. The minimum extract concentration that will inhibit 50% enzyme activity (IC₅₀) revealed that the peel showed the highest significant (P < 0.05) α -amylase and α -glucosidase inhibitory activities while the seed revealed the highest MDA inhibition, NO[•] and ABTS radical scavenging abilities. Syringic acid, eugenol, vnillic acid, isoeugenol, guaiacol, phenol, kaempherol, catechin, p-hydroxybenzoic acid, ferulic acid, apigenin, naringenin, epigallocatechin, lupeol and epigallocatechin-3-O-gallate were revealed when the aqueous extracts of avocado pear leaf and fruit parts was characterized.

Conclusions

This work unravel the possible mechanisms (inhibition of α -amylase and α -glucosidase) used by avocado pear leaves and fruit parts to manage/treat diabetes type 2 and the bioactive phenolics that may take part in the process.

KEYWORDS: Type 2 diabetes, Malondialdehyde, *Persea americana*, α -amylase, α -glucosidase